KING (H.M.)

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A CASE OF RENAL PHTHISIS COMPLICATING PULMONARY TUBERCULOSIS.*

By HERBERT MAXON KING, M. D.,
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Mr. President and Gentlemen: Transient albuminuria intervening in the course of pulmonary tuberculosis is a most frequent and trivial complication which need neither occasion alarm nor necessitate any change in the mode of treatment, since, as a rule, it is either simply an evidence of the impaired nutrition of the renal epithelium or the result of the periodic pyrexia. Even that degree of renal congestion marked by the presence in the urine of albumin, small hyaline casts, and cylindroids, appearing at intervals in the course of the disease, is not an alarming or infrequent complication of phthisis and can not of itself indicate any serious disturbance of the integrity of the kidneys.

But a persistent albuminuria appearing after the development of tuberculosis in the lungs, attended with an increased pyrexia and less marked remissions, rigor, polyuria, dysuria, and especially pyuria to a greater or less degree, should always excite the keenest apprehension

* Read before the Grand Rapids Academy of Medicine, March 9, 1896.

and vigilance. For these are unmistakable signs of nephritis, a condition grave enough in itself, to be sure, but doubly so when occurring as a complication of pulmonary phthisis.

Intervening in the later stages of pulmonary tuberculosis, or in the course of an acute general tuberculosis, nephritis only hastens the inevitably fatal termination, and its recognition in such cases is a matter of little moment to the patient and, aside from gratifying scientific zeal, of little practical value to the physician.

But, appearing as it sometimes does early in the course of the pulmonary disease, when but a small portion of the lung is involved, I can not but think that its recognition is the means of occasionally saving life, or at least of prolonging it.

Nephritis in a tuberculous patient whose kidneys have before been healthy must almost of necessity be either a renal phthisis due to direct infection through the lymph channels (or possibly the circulation?) or an interstitial nephritis due to prolonged disturbance with the nutrition of the kidney cells. The case which I desire to present to you this evening is a type of the former, one of unmistakable tuberculosis of the kidney; its interest lies mainly in the microscopical appearance of the urinary sediment, in which absolute proof of the nature of the existing lesion is demonstrable by the presence of the tubercle bacilli in characteristic arrangement.

Tuberculosis of the kidney occurs in two distinct forms: (a) acute miliary tuberculosis, and (b) local caseating tuberculosis or scrofulous kidney (Purdy). The former is twice as frequently met with as the latter, according to the above-quoted authority, and hence renal

phthisis is not a condition often met with, especially in private practice.

I find upon a careful *résumé* of the last fifty cases of tuberculosis occurring in my own practice that I have seen three in which renal phthisis was a complication. I have been able to demonstrate the presence of tubercle bacilli in the urinary sediment in two of these, including the case which I present to you to-night. The third instance of this condition yielded to treatment * before there was breaking down of the involved tissues, and the specific bacillus has presumably not been present in the sediment, although the case is still under close observation. Even when the bacilli do exist in the urine, as shown in the development of cultures inoculated from such urine, Purdy states that it is very difficult to demonstrate their presence from cover-glass preparations of urinary sediment. Vierordt, however, says it is as easy to demonstrate their presence in the urine as in the sputum. I have not found it so in my experience, and for obvious reasons I should think it would always be a much more difficult matter.

The case which I wish to present is that of a woman, thirty years of age. In the family history it develops that one sister died from acute tuberculosis at eighteen years of age, and one brother has shown evidences of incipient disease at the apex of one lung. Parents and grandparents free from tuberculosis in any form. The patient has been married seven years, in which time she has borne five children, all apparently healthy, the last being, at the time of examination (February 17th), seven weeks old. Cough and emaciation date from about one year ago. She was, however, much better during pregnancy, only to grow rapidly worse after parturition.

* The hypodermic administration of nucleinic acid solution in doses averaging a hundred minims daily.

Subjectively, cough and expectoration, occasional night sweats, anorexia, and general loss of strength are the only distressing symptoms. It is worth remark that at no time in the history of the disease has pain, either in the region of the kidneys or upon micturition, been present.

Physical Examination, 2 o'clock, p. m.—Pulse, 125, regular and fairly strong. Temperature, 102° F. Inspection discovers marked emaciation, depressed infraclavicular spaces on both sides, with considerable loss of expansion at right apex. Palpation discovers increased vocal fremitus at right apex. Percussion: Dullness marked at right apex; much less, though slight, dullness at left apex. Auscultation: Cavernous respiratory sounds, moist and dry râles, and increased vocal resonance at right apex. "Roughened" respiration at left apex. Posteriorly, diminished vesicular murmur at base of right lung. Examination of the blood by Thoma-Zeiss cytometer gives an average of 3,975,000 red corpuscles to the cubic millimetre; by von Fleischl's hæmometer, fifty per cent. of normal hæmoglobin. Microscopically, numerous poikilocytes present. (It is interesting to remark the discrepancy between the numerical value of the blood and the amount of hæmoglobin present.) Examination of sputum: Profuse in quantity, watery, muco-purulent, containing a small number (comparatively) of bacilli tuberculosis and large colonies of streptococci and other bacteria. Examination of urine: The vagina having been cleansed by thorough douching, a single specimen of urine was obtained. It was acid in reaction. Specific gravity, 1.013; good color, slightly clouded. The chlorides and sulphates in normal amount, phosphates somewhat diminished, and nine grains of urea to the ounce. Albumin present, one fortieth per cent. by weight (Esbach's albuminometer). Peptones. Sugar and bile absent. Microscopically, there were present numerous hyaline and granular casts, some coated with epithelium; a few red blood-corpuscles were also found. There was abundance of pus and considerable kidney epithelium present, and colonies of

bacteria, but I was able to demonstrate no bacilli tuberculosis. The unusual pyrexia and prostration in this case were not to be accounted for by the comparatively slight lesion in the lungs, nor even by any ordinary interstitial nephritic complication, such as might exist without active destructive changes. A provisional diagnosis of renal phthisis was therefore made pending further developments. The patient had been receiving one drachm of the improved yeast nuclein solution by the stomach once daily, and two hypodermic injections of about twenty minims each, besides the usual medication directed to the improvement of nutrition. She was now placed on tablespoonful doses of Basham's mixture thrice daily; aquozone, about one pint daily; the usual doses of cod-liver oil, which I believe she was taking already, and from a hundred to three hundred minims of yeast nuclein solution were administered hypodermically in one dose daily. To control exacerbations of temperature, cool sponging was employed, and the diet was regulated with a view of avoiding as far as seemed feasible nitrogenous foods. For a few days the patient did well subjectively, but a glance at the clinical chart which I present to you will show practically no change in pulse or temperature, while repeated uranalyses demonstrated a rapid increase in the amount of pus present, together with other formed elements. Several times I have found what I think were pus casts in the urinary sediment, such as are described by Johnston, but which Purdy says "have rarely been noted by other observers." Up to March 6th, however, I was unable to demonstrate tubercle bacilli, and notwithstanding the condition now existing in the kidney no uræmic symptoms appeared (according to Purdy, uræmic complications are extremely rare in renal phthisis, and this is probably due to the fact that usually but one kidney is affected, while the other acts vicariously and is aided by the profuse diaphoresis which is almost always present). On March 6th uranalysis resulted as follows: Quantity in twenty-four hours, thirty-six ounces; reaction, acid; specific gravity, 1.011; chlorides normal; sulphates and phosphates diminished.

Urea, six grains and a half to the ounce; two hundred and thirty-four grains in twenty-four hours; albumin present, six per cent. in bulk, after filtration (Purdy's method with the centrifuge).

Microscopical Examination.—Large and small hyaline, granular epithelium, and pus (?) casts abundantly present. A few red blood-corpuscles and a very large amount of pus present, much kidney epithelium in which degenerative changes were marked, and, finally, large colonies of tubercle bacilli were easily demonstrable in the urinary sediment. This discovery placed the diagnosis beyond all question of doubt as to the nature of the complication, and it only remained to establish as far as possible the extent of the kidney lesion and the prognosis. On March 7th Dr. Eugene Boise and Dr. C. H. Johnston saw the case with me. On palpation, a rigidity of the abdominal muscles and tenderness upon pressure over the right kidney were noted; this, taken with the fact that the volume of urine and the amount of urea excreted in the twenty-four hours were in goodly proportion to the weight of the body, seemed to indicate that the disease was limited to the right kidney while the integrity of the left was unimpaired. Owing to the nature of the case, Dr. Boise and Dr. Johnston recommended disregard of the laws which govern the diet of ordinary nephritis, and as improved nutrition was an imperative essential to any degree of success in treatment, forced alimentation was advised, nitrogenous food included. No change in medication was suggested.

Now, as to prognosis: Chance of convalescence or even delayed fatal termination seems almost hopeless when the circumstances surrounding this particular case are considered. The patient brought down to the lowest point of resistance by the rapid succession of pregnancies is in no condition to face the pulmonary disease, to say nothing of its more serious renal complication. The extreme danger of liver involvement (from its close

proximity), before complete sacculation of the renal capsule can have rendered the liver safe, is pointed out by Purdy and others, and is especially to be feared in this case, provided death does not intervene from other causes. On the other hand, there is no danger of the other kidney becoming involved through hetero-infection, which late observers agree is impossible, the existence of tuberculous disease in the one kidney having little or no influence on the other, aside from increasing the exercise of its function; therefore, in time, provided other complications did not arise, a condition of pyonephrosis might give place to complete obliteration of the affected organ, its functions being entirely supplanted by the healthy kidney.

I now beg to call your attention to the specimens under the microscopes. The first is a cover-glass preparation made from the sputum, stained in the ordinary manner. There is nothing remarkable about it except as it shows the moderate extent of the tuberculous process in the lungs, by the small number of bacilli present, and the existence of a mixed infection, as shown by the presence of septic bacteria. The second specimen is one of the urine sediment unstained, as obtained by the centrifuge; the characteristic formed elements are very

FIG. 1.—1, 1, 1, 1, Bacilli tuberculosis; 2, 2, 2, streptococci and other bacteria; 3, 3, 3, pus cells. (Drawn with the aid of a camera lucida.)

prettily demonstrated. The third is a more rare and far more interesting specimen, one of the urine sediment, containing bacilli tuberculosis, and accordingly the pathognomonic sign of the existing condition. It is

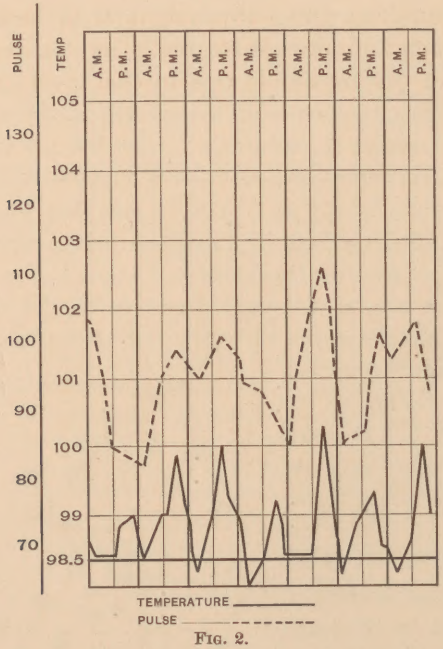

FIG. 2.

stained by the same process as the sputum and demonstrates the bacilli, in several fields, in an arrangement similar to that met with in pure cultures, which, according to Vierordt, Purdy, and others, is characteristic of this condition, and it would be quite impossible to confound them with the smegma bacilli of the healthy urethra. By aid of an improvised camera lucida I have

made a sketch of one field which after long search I found best illustrated this arrangement of the bacilli, and this I also beg to present as perhaps showing this peculiar arrangement better than the field now under the microscope (see Fig. 1).

In conclusion, the lesson taught us by such a case may be worthy of note. In the first place, the urine from a phthisical patient should be subjected to frequent and

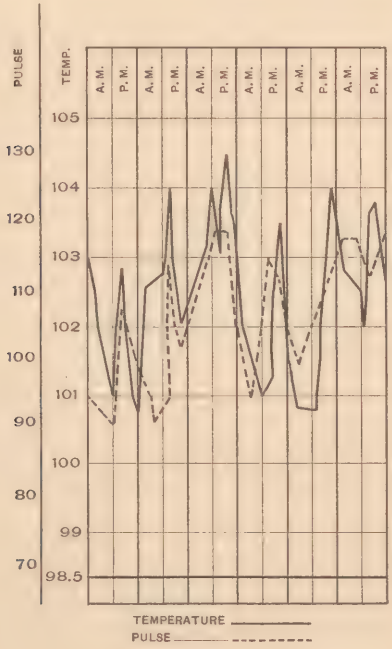

FIG. 3.

rigid examinations, and more particularly in cases where the rigors, pyrexia, and prostration are out of proportion

to the extent of the apparent lesion. In this connection I would ask your attention to the two clinical charts. The first (Fig. 2) is that of a patient suffering from fully as great a pulmonary involvement as is the case reported, and the temperature and pulse I regard as typical of the generality of such cases. The second (Fig. 3) is a chart from the case reported. The departure from the rule in this would, of course, excite our most lively suspicions.

Finally, vigilance should not be relaxed because of absence of subjective symptoms pointing to renal complications, which, as I have shown, may progress to an advanced stage without any symptoms which would indicate the nature of the complication.

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